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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

John MORTEN

Group Art Unit: 1655

Appln. No. 09/787,371

Examiner: C. Myers

Filed: March 16, 2001

Title: POLYMORPHISMS IN THE HUMAN VCAM-1 GENE, SUITABLE FOR DIAGNOSIS AND TREATMENT OF VCAM-1 LIGAND MEDIATED DISEASES

* * * *

February 27, 2002

AMENDMENT

Hon. Commissioner of Patents
Washington, DC 20231

Sir:

In response to the Official Action dated November 27, 2001, Applicants respectfully request reconsideration of the above-identified application in view of the following amendment and remarks.

IN THE CLAIMS

Cancel claims 5, 8, 9, 10 and 11 without prejudice.

Please amend the claims as follows:

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1. (Amended) An assay for detecting a nucleotide polymorphism in the human VCAM-1 gene, which method comprises determining the nucleic acid sequence at one or more of positions 278, 647, 707, 748, 829 and 1467 in the VCAM-1 gene as defined by the positions in EMBL ACCESSION NO. M92431.

2. (Amended) The assay of claim 1 in which the nucleotide polymorphism is selected from the group consisting of:

the polymorphism at position 278 is the presence of T and/or C;

the polymorphism at position 647 is the presence of A and/or G;

the polymorphism at position 707 is the presence of T and/or C;

the polymorphism at position 748 is the presence of T and/or C;

the polymorphism at position 829 is the presence of G and/or A; and

the polymorphism at position 1467 is the presence of T and/or C.

3. (Amended) The assay according to claim 1 or 2 in which the nucleic acid sequence is determined by a method selected from the group consisting of an amplification refractory mutation system and restriction fragment length polymorphism.

4. (Amended) An isolated and purified nucleic acid comprising any one of the following polymorphisms:

the nucleic acid of EMBL ACCESSION No. M92431 with C at position 278;

the nucleic acid of EMBL ACCESSION No. M92431 with G at position 647;

the nucleic acid of EMBL ACCESSION No. M92431 with C at position 707;

the nucleic acid of EMBL ACCESSION No. M92431 with C at position 748;

the nucleic acid of EMBL ACCESSION No. M92431 with A at position 829;

the nucleic acid of EMBL ACCESSION No. M92431 with C at position 1467;

or a complementary strand thereof comprising at least one polymorphism or a fragment thereof of at least 20 bases comprising at least one polymorphism.

6. (Amended) An allele specific primer that specifically detects a VCAM-1 gene polymorphism at one or more of positions 278, 647, 707, 748, 829 and 1467 in the VCAM-1 gene as defined by the positions in EMBL ACCESSION NO. M92431.

7. (Amended) An allele-specific oligonucleotide probe a VCAM-1 gene polymorphism at one or more of positions 278, 647, 707, 748, 829 and 1467 in the VCAM-1 gene as defined by the positions in EMBL ACCESSION NO. M92431.

See the attached Appendix for the changes made to effect the above claim(s).

REMARKS

Claims 1, 2, 3, 4, 6, and 7 remain active in the application.

Claims 1-4, 6 and 7 are rejected under 35 U.S.C. § 101 on grounds that the claimed invention lacks utility.

As amended, the claims recite "an assay for detecting a nucleotide polymorphism...". Such assays are used in many ways, for instance to characterize individuals in terms of haplotype, as described on page 9, lines 18-21 of the specification. Accordingly, the rejection should be withdrawn.

Claims 1-4, 6 and 7 are rejected under 35 U.S.C § 112, first paragraph for essentially the same reason as the §101 rejection and should be withdrawn in view of the present amendment reciting an "assay".

Claims 1-4, 6 and 7 are rejected under 35 U.S.C § 112, second paragraph for being indefinite due to the phrase " EMBL ACCESSION NO. M92431." The Examiner asserts that sequences listed in the EMBL database are continuously updated and modified. However, the specification states that the VCAM-1 gene has been "published" as EMBL ACCESSION NO. M92431, having 2,396 base pairs. A printout of the sequence is submitted herewith. The Examiner has not explained why or how this published sequence could be revised. The actual nucleotide sequence is submitted herewith and cannot be revised except, perhaps, if a sequencing error were to be found.

Claims 1-4, 6 and 7 have been clarified with respect to the phrase "the positions" in the sequence.

Claims 1-3 have been amended to recite process steps that agree with the preamble, which is now stated to be an assay.

Claims 2 and 3 have been clarified as to the nature of the polymorphism being detected, and that at least one polymorphism is being detected.

Claims 6 and 7 now recite a "probe that specifically detects" a VCAM gene, to overcome the rejection over the phrase "capable of detecting."

Claims 4, 6, and 7 are rejected under 35 U.S.C. 102(b) over Iademarco *et al.*

The Examiner has interpreted claim 4 as including any nucleic acid fragment of least 20 nucleotides or complimentary strand without any specific level of complimentarity. As amended, claim 4 clearly indicates that the complimentary strands and nucleic acid fragments must contain at least one polymorphism, thereby distinguishing and it Iademarco *et al.*

The Examiner asserts that claims 6 and 7 are anticipated because the Iademarco *et al.* primers are considered to be allele specific and "are capable of indirectly detecting the stated

polymorphisms since they amplify sequences of the promoter region containing these polymorphisms." (Official Action page 11, lines 10-12) As amended, the primers of claims 6 and 7 "specifically detect" gene polymorphisms, and thus have sequences that are not disclosed by Iademarco *et al.*

Applicants submit that the case is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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Enclosure: Appendix